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### A preliminary list of the moth species of Mindanao Island (Philippines), in the Cesa Collection, with some remarks (Lepidoptera)

Muhabbet Kemal <sup>1</sup> Sibel Kızıldağ Ahmet Ömer Koçak

**Abstract:** A preliminary list of the moth species of Mindanao Island (Philippines), in the Cesa Collection, with some remarks (Lepidoptera). *Cesa News* 160: 1-15, 29 figs.

In this paper, 49 lepidopteran taxa of 10 families, collected from two localities Mt. Kitanglad and Mt. Caragan in Mindanao Island (Philippines) are listed. The genital morphology of some species and DNA barcoding of old Museum specimens are discussed.

**Key words:** Lepidoptera, fauna, male genitalia, DNA barcoding, Philippines, Mindanao.

The Philippines is an archipelagic country in a geographical location in Southeast Asia, often represented by orientalic elements in biogeography. In the last decades, the islands have become the focus of many foreign collectors and researches.

Mindanao is the second largest island in the Philippines. In the present paper, totally 49 moth taxa, collected from two mountainous localities, Kitanglad and Caragan (Mindanao) are identified by the authors and evaluated from faunistical and taxonomical standpoints. In fact, in 1998, the third author carried out field studies privately in various islands of the Philippines, partly assisted and guided by local friends in the rain forest of the mountainous regions. A significant amount of the nocturnal Lepidoptera of these mountains, also of Mt. Matutum (Mindanao) [coded here as Mtu], from Negros, Panay, Bohol, Luzon, and Palawan Isl. were obtained within this program. For the previously used geographical codes, see Koçak & Kemal (2017). First evaluations

<sup>1</sup> Dr Muhabbet Kemal - Dr Sibel Kızıldağ, Van Yüzüncü Yıl University, Faculty of Science, Dept. of Biology, Campus, Van / Turkey.

e-mails: [muhabbet\\_kemal@yahoo.com.tr](mailto:muhabbet_kemal@yahoo.com.tr) - [sibelkizildag@yyu.edu.tr](mailto:sibelkizildag@yyu.edu.tr)

Prof. em. Dr Ahmet Ömer Koçak, c/o Van Yüzüncü Yıl University, Faculty of Science, Dept. of Biology. e-mail: [cesa\\_tr@yahoo.com.tr](mailto:cesa_tr@yahoo.com.tr)

of these materials could be made after a long time, due to various restrictive reasons. Previous small initiatives of the authors' were published in the serials of the Cesa (Koçak, 1996, 1997; Koçak & S.Seven, 1997a-c, 1998; Koçak & Kemal, 2007, 2011, 2012). The present paper will be followed by similar articles that will be published at irregular intervals.

The current materials, obtained from native collectors from Mindanao, are preserved in the Cesa Collection. Evaluations of the morphology and obtaining their DNA barcode sequences, if necessary, will be separately studied.

The collecting localities in Mindanao of the present material are as follows;

1. Bukidnon [coded here as Bkd]: Mt. Kitanglad (may pronounced as Katanglad) [coded here as Ktd]. Upper Heights via Intavas, northern slopes, between 20-22.7.1998.
2. Mt. Caragan [coded here as Crg]. This locality has apparently been visited in 1998 first. Its exact geographical place is unknown to us. However, 1♂, collected from Mt. Caragan on 21.1.1998 has been previously used in the type-series of the new species *Kunugia dendrolimoides* described by Zolotuhin et al. (1998: 185), see below. Another information about this locality was given by Nässig & Treadaway (1998: 394) among the material of *Loepa mindanaensis* Schüssler, 1933 as “1♂, “Mt. Caxagan” [not located, possibly near Mt. Kitanglad?], 22.1.1998”.

It is interesting that the native collectors shared these materials between us, collected from Mt. Caragan on 21-22 Jan. 1998. The image of two labels among the material in the Cesa Collection<sup>2</sup>, collected from Mt. Caragan on the same collecting dates with the Zolotuhin's and Nässig's materials (see below).



<sup>2</sup> The materials from Mt. Caragan in the Cesa Collection were collected between 20-26. 1. 1998.

## List of the species

### **Aganaidae**

#### **1. *Agape chloropyga* (Walker, 1854) (Fig.1)**

Original reference: *Hypsa chloropyga* Walker, 1854, List Spec. lepid. Insects Colln Brit. Mus. 2: 454-455. Type: Australia.

Synonyms: *chloropyga* Walker, 1854; *analis* Walker, 1856; *cyanopyga* R. Felder, 1874; *snelleni* Gaede, 1914

Range (as codes): AU CN Yu MY MM TH CMA Int Knc VN ID Bor Snd Mlc Aru Bor Flo Ja Sum Crm Clb PG NBr PH Luz Mno Crg

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

#### **2. *Asota heliconia* (Linnaeus, 1758) (Fig.2)**

Original reference: *Phalaena heliconia* Linnaeus, 1758, Syst. Nat. (Edn. 10) 1: 511. "Habitat in Calidis regionibus".

Synonyms: *heliconia* Linnaeus, 1758; *dama* Fabricius, 1775; *monycha* Cramer, 1779; *silvandra* Stoll, 1782; *doryca* Boisduval, 1832; *intacta* Walker, 1854; *lanceolata* Walker, 1856; *clavata* Butler, 1875; *dicta* Butler, 1875; *zebrina* Butler, 1877; *venalba* Moore, 1877; *leuconeura* Butler, 1879; *perimele* Weymer, 1885; *semifusca* Butler, 1887; *nicobarica* Swinhoe, 1892; *malisa* Swinhoe, 1892; *ghara* Swinhoe, 1892; *lara* Swinhoe, 1893; *enganensis* Rothschild, 1896; *naturensis* Rothschild, 1896; *murina* Rothschild, 1896; *timorana* Rothschild, 1896; *kalaonica* Rothschild, 1896; *riukiuanica* Rothschild, 1896; *philippina* Rothschild, 1896; *sangirensis* Rothschild, 1896; *bandana* Rothschild, 1896; *kiriwinae* Rothschild, 1896; #*extensa* Rothschild, 1896; #*diluta* Rothschild, 1896; #*brevipennis* Rothschild, 1896; #*nervosa* Rothschild, 1896; *extensa* Seitz, 1914; *atrata* Jordan, 1924

Range (as codes): MM Tns TH CMA Int Knc CN TW JP Ri ID Egg Tim PH Pal Bal Ley Mno Crg Neg Luz Sam Sib AU PG Bor Sbh KBa Nia Snd Bli Aru Amb Crm Adm Bsm Nk Ja Clb

Material studied: 3♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

### **Arctiidae**

#### **3. *Lemyra philippinica* Thomas, 1990**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

### **Geometridae**

#### **4. *Cleora dacasini* Herbuleot, 1981 (Figs.17-21)**

Original reference: *Cleora dacasini* Herbuleot, 1981, Bull. Soc. ent. Mulhouse 1981: 33. Holotype ♂: Philippines, Luzon, Baguio, Santo Tomas Mts. 21.ix.1980, Domingo A. Dacasin leg.

Synonyms: *dacasini* Herbuleot, 1981; *inopinata* Sato, 1989

Range (as codes): PH Luz Neg Mno Ktd Bkd Tgu Dav

Material studied: 2♂ (GP2965, GP2966). Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

Range of the species: Philippines: Luzon (type-locality), Negros, Mindanao (Bukidnon, Caragan Mt. [present record; presumably in Davao]),

Remarks: For the morphological identity of this species we used the male genitalia, published by Sato (1989).

DNA barcoding: 20-30 years old museum materials are causing damage to the mtDNA due to reasons such as contamination from bacteria/fungus or prolonged exposure to protective chemicals. For this reason, isolation of the mtDNA sequence from the damaged tissue is very difficult and short sequences generally was obtained because breaking. Nowadays, Mitochondrial Cytochrome Oxidase Subunit I short sequence (164 bp) was obtained by Ontario Biodiversity Institute from the sample, collected by Dacasin in 1980 from the type locality of *C. dacasini* (Barcode GWOTY750-14 in BOLD, unpublished data).

Small part of a single hind leg femur is sufficient for the kit extractions and is preferred for dried museum material. DNA from dried material 20 years old was purely extracted from tissue using the REDExtract-NAmp Tissue PCR kit (Sigma) as modified by author. MtCOI gene of *C. dacasini* specimen in Mindanao was successfully barcoding with 658 base pairs (Fasta of 1♂,

PH001, Cesa). Sequence of *C. dacasini*, was checked in GenBank used to blast function to ensure that there was no contamination in our sample from bacteria or fungus.

Mindanao is the second largest and southernmost island of the Philippines. It is one of the three island groups of the country such as Luzon and Visayas. Islands are important geographical barriers for gene flow, so the levels of differentiation of populations in two islands should be measured. The Mindanao sample mentioned in this study and the Luzon sample recorded in the Bold System are morphologically comparable. However, it is not possible to evaluate two populations genetically. Because the molecular characters of the Luzon sample are missing, due to the short sequence being obtained.

##### **5. *Cleora* sp.**

Material studied: 1♂ (GP2967). Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **6. *Fascellina* sp.**

Material studied: 2♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **7. *Hypochrosis* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **8. *Pingasa* sp.1 (Figs.3, 22-25)**

This species is closer to *Pingasa chlora* (Stoll), externally. Its male genitalia also nearer to *chlora*, but some important structures differs greatly from it. For comparing with the Bornean *Pingasa* species, we used Holloway's (1996) redescriptions, and genitalic photographs. The specific identity of two *Pingasa* species from Mindanao didnot reach a final decision yet.

Material studied: 1♂ (GP2968). Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **9. *Pingasa* sp.2 (Figs.4, 26-29)**

See above.

This species resembles in some details to *Pingasa rubicunda* W.Warren (1894: 383)<sup>3</sup>, described from Khasia Hills (E.India). However, the male genitalia is remarkably different from *rubicunda*, illustrated by Holloway (1996) from Borneo.

Material studied: 4♂ (GP2969). Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **10. *Pingasa* sp.3**

Larger than the preceding species.

Material: 1 ex. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998. local collector (Cesa).

##### **11. *Racotis* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **12. *Tasta* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

##### **13. *Xandrames latiferaria* (Walker,1860) (Fig.5)**

Original reference: *Pachyodes* ? *latiferaria* Walker,1860, List Spec. lepid. Insects Colln Brit. Mus. 21: 445-446. Type: North China.

Synonyms: *latiferaria* Walker,1860; *curvistriga* W.Warren,1894; *cneocozona* L.B.Prout,1926; *mulsa* L.B.Prout,1935; *recondita* Inoue,1982

Range (as codes): MY Bor Sbh KBa TH Nna Kao Chy IN Ass Meg Khs ID Ja JP PH Crg

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

<sup>3</sup> Correct page number of the original description of *Pingasa rubicunda* is 383, not "385" as mentioned by Holloway (1996).

***Lasiocampidae******Kunugia dendrolimoides* Zolotuhin, Treadaway & Witt,1998**

Original reference: *Kunugia dendrolimoides* Zolotuhin, Treadaway & Witt,1998, Nachr. ent. Ver. Apollo (Suppl.) 17: 185, figs. Holotype ♂: Philippines: C-Leyte, Hilusig, Mt. Balocau 600m, CCGT.

Synonym: *dendrolimoides* Zolotuhin, Treadaway & Witt,1998 Range (as codes): PH Ley Luz Sam Mno Busa Crg

Remarks: In the type-series, the authors used material collected from Mt. Caragan (Mindanao) in the original description of *dendrolimoides*.

***Lymantriidae*****14.*Psilochira amydra* (Collenette,1932) (Fig.6)**

Original reference: *Dasychira amydra* Collenette,1932, Novit. zool. 37: 175, pl.1 fig.36. Type: Philipines, Palawan.

Synonym: *amydra* Collenette,1932

Range (as codes): TH PH Pal Mno Bkd Ktd MY Bor ID Sum

The species was unknown from other parts of the Philippines, with the exception of "Palawan", its terra typica (Holloway, 1999).

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

***Noctuidae*****15.*Arcte coerula* (Guenée,1852)**

Original reference: *Cocytodes coerula* Guenée,1852, Spec. Gén. Lépid., Noct. 3: 41-42, pl.13 fig.10. Type: "Indes Orientales".

Synonym: *coerula* Guenée,1852

Range (as codes): WS FJ NH LO NC PG MY IN TH CMa Int VN NP LK Pdy TW CN ID PH Mno Bkd Ktd JP KP KR RU Us

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**16.*Artena rubida* (Walker,[1863])**

Original reference: *Ophisma rubida* Walker,[1863], J. Linn. Soc. (Zool.) 7: 179. Type: Sarawak.

Synonym: *rubida* Walker,[1863]

Range (as codes): MY Bor Swk TH Nrt Kao CMa Int CN IN Adm ID Sum Bor PG PH Mno Bkd Ktd

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**17.*Avitta quadrilinea* (Walker,[1863]) (Fig.7)**

Original reference: *Asta quadrilinea* Walker,[1863], J. Linn. Soc. (Zool.) 7 (1864): 171. Type: Sarawak.

Synonyms: *quadrilinea* Walker,[1863]; *quadrilinealis* Moore,1867; *completa* Rothschild,1915

Range (as codes): MY Bor Swk IN SI Djl PG TH CMa CDo NP LA LK MY PH Bor Mno Bkd Ktd ID Sum Ja Amb Tim Clb Flo PG SB

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**18.*Bastilla* sp.**

Externally resembles to *vitiensis* Butler,1886 (Holloway & Miller,2003).

Material studied: 2♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998. 1♂, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**19.*Callopistria trilineata* (Walker,1862)**

Original reference: *Agabra trilineata* Walker,1862, J. Linn. Soc. Lond. (Zool.) 6: 137. Type: Sarawak [correct page number is "137", not "190" as mentioned by Holloway (1989: 168)].

Synonym: *trilineata* Walker,1862; *duplicilinea* Walker,1864

Range (as codes): SG Bor Swk MY PH Mno Crg ID Clb PG

See: Holloway (1989) for the range and identity of the species. The species was mentioned from the Philippines without locality (Holloway, 1989).

Material studied: 2♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**20. *Conservula* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**21. *Daddala microdesma* (A.E.Prout,1928) (Fig.8)**

Original reference: *Sympna achaeopsis microdesma* A.E.Prout,1928, Bull. Hill. Mus. Witley 2: 173.

Synonyms: *microdesma* A.E.Prout,1928; *microdesma* Berio,1958

Range (as codes): TH Nan Dpk MY Bor ID Sum PH Mno Bkd Ktd

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**22. *Ercheia cylaria* (Cramer,[1779]) (Fig.9)**

Original reference: *Phalaena Noctua cylaria* Cramer,[1779], Uitl. Kapellen 3: 100.

Synonyms: *cylaria* Cramer,[1779]; *cyclota* Guenée,1852; *fusifera* Walker,1858; *signivitta* Walker,1858; *polychroma* Walker,1858; *atrivitta* Walker,1864; *purpureilinea* Walker,1864; *semipallida* Walker,1864; *gundiana* Felder,1874; *costipannosa* Moore,1882; *pannosa* Moore,1883; *uniformis* Moore,1883; *anvira* Swinhoe,1918

Range (as codes): IN TH CMa Dst Int Cmz Cz11 Nan Dpk Ntt Hba Pgg Knc Cbi MY LA VN MM NP BD LK CN TW PH Neg Mno Crg ID Sum Bor Tim Flo Sbw Clb Ij Mcr Crm Amb PG AU

The identity of this species is based upon Holloway's (2005) re-descriptions. This species is also known from Negros Is.

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**23. *Eudocima phalonia* (Linnaeus,1763)**

Original reference: *Phalaena Noctua phalonia* Linnaeus,1763, Centuria Insectorum rariorum: 28. Type: "Indiis".

Synonyms: *phalonia* Linnaeus,1763; *fullonia* Clerck,[1764]; *dioscoreae* Fabricius,1775; *pomona* Cramer,1776; *princeps* Guenée,1852; *obliterans* Walker,1858

Range (as codes): ZA ZR GA AU NZ ID PH Mno Bkd Ktd RU Us KP KR JP TW CN VN NP IN Mh Nsk TH Nrt Kao Bnk CMa Cuo Cuo5 Phr Loe Knc Nna Nth Cbi Cph Srt Udo MM

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**24. *Hypocala violacea* Butler,1879**

Original reference: *Hypocala violacea* Butler,1879, Trans. ent. Soc. London 1879: 6. Syntypes: NE India: [Assam], Cachar.

Synonyms: *violacea* Butler,1879; *clarissima* Butler,1892; *kebeae* Bethune-Baker,1906

Range (as codes): IN Ass Cac LK PG TH Knc CMa Cuo Cuo7 Int MY VN NP ID Tim Flo PH Mno Bkd Ktd TW JP KP KR

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**25. *Ischyja* aff. *manlia* (Cramer,1776)**

Material: 2♂ from Mindanao, Kitanglad Mt. resemble externally to this species. The identity of the specimens are temporary, not definite.

**26. *Ophisma ? pallescens* (Walker,[1863]) (Fig.10)**

Original reference: *Lagoptera pallescens* Walker,[1863], J. Linn. Soc. (Zool.) 7: 179. Type: Sarawak.

Synonyms: *pallescens* Walker,[1863]; *violetta* Pagenstecher,1896; *subplaga* Bethune-Baker,1906; *intermedia* A.E.Prout,1922

Range (as codes): ID Clb Bor Swk Crm Clb Flo Tim MY TH Tng PG PH Mno Bkd Ktd

Remarks: The specimen from Mindanao, Kitanglad Mt. looks like very much to *Ophisma pallescens* (Wlk.), with the exception of the size and shape of black marking on the upperside of hindwing. The genus *Ophisma* is apparently represented by two species (*pallescens* and *gravata*) in the Orientalic Region. None of these species has been reported from the Philippines so far. Therefore, we find this information interesting and to be investigated.

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**27. *Oxyodes scrobiculata* (Fabricius, 1775) (Fig.11)**

Original reference: *Noctua scrobiculata* Fabricius, 1775, Syst. Ent.: 252. Type(s): "India Orientalii".

Synonyms: *scrobiculata* Fabricius, 1775; *clytia* Stoll, [1782]; *vittata* Fabricius, 1794; *ochreata* Rothschild, 1915; *samoana* Tams, 1935; *tanymekes* Tams, 1935; *novaehibridensis* Viette, 1951; *obscurior* Holloway, 1979

Range (as codes): TH CMa Cu01 Cu07 Cz10 Cmz CD0 Dst Ds09 Int Phr Nrt Knc Sbu Bnk Cph Cbi Pht Cbu MY Bor VN LK Dck Pdy IN NP CN TW JP KP KR ID Sum Sba Tim Flo PG WS NH NC FJ PH Mno Bkd Ktd

Material studied: 4♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**28. *Parallelia calefaciens* (Walker, 1858)**

Original reference: *Naxia calefaciens* Walker, 1858, List Spec. lepid. Insects Colln Br. Mus. 14: 1405-1406. Syntypes: [Bangladesh]: "Silhet", [Sri Lanka]: "Ceylon".

Synonyms: *calefaciens* Walker, 1858; *mediifascia* Wileman & South, 1920

Range (as codes): BD Syl LK TH MY Bor KH VN TW PH Bkd Ktd ID Sum Bor Clb Mlc Sda PG SB

The identity is based upon Holloway's (2005) re-descriptions.

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**29. *Pindara illibata* (Fabricius, 1775)**

Original reference: *Noctua illibata* Fabricius, 1775, Syst. Ent.: 592. Type(s): India.

Synonyms: *illibata* Fabricius, 1775; *peropaca* Hübner, [1831]; *laetabilis* Guenée, 1852

Range (as codes): TH CMa Int MY LA KH VN NP IN LK Pdy CN TW JP PH Mno Bkd Ktd ID Sum Bor Tim Flo Clb Mlc Crm Bia PG AU

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**30. *Platyja minutipuncta* Swinhoe, 1901 (Fig.12)**

Original reference: *Platyja minutipuncta* Swinhoe, 1901, Ann. Mag. nat. Hist. (7) 7: 497-498. Syntypes 2♂: Singapore, Jaintia Hills.

Synonym: *minutipuncta* Swinhoe, 1901

Range (as codes): IN SG MY Bor SG TH ID Sum Clb PH Bkd Ktd

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**31. *Ptyonota formosa* Hampson, 1894 (Fig.13)**

Original reference: *Ptyonota formosa* Hampson, 1894, Fauna Br. India, Moths 2: 425.

Synonym: *formosa* Hampson, 1894

Range (as codes): MM Tns ID Sum Bli SG MY Bor BN CN Yu PH Mno Crg

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**32. *Ramadasa pavo* (Walker, 1856) (Fig.14)**

Original reference: *Chasmina pavo* Walker, 1856, List Spec. Lepid. Insects Colln Br. Mus. 9: 147: Type: Ceylon.

Synonym: *pavo* Walker, 1856

Range (as codes): LK Pdy IN Adm MY TH CMa Dst Ds08 PH Mno Bkd Ktd

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**33. *Sasungana leucorina* (Hampson, 1908)**

Original reference: *Magusa leucorina* Hampson, 1908, Cat. Lepid. Phalaenae Br. Mus. 7: 57.

Synonym: *olivaria* Hampson, 1908; *leucorina* Hampson, 1908

Range (as codes): ID Clb Mlc PG MY Bor PH Mno Crg

See: Holloway (1989) for the range and identity of the species. The species was not recorded from the Philippines (Holloway, 1989).

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**34. *Simplicia* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**35. *Stictoptera* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**36. *Thyas juno* (Dalman, 1823)**

Original reference: *Noctua juno* Dalman, 1823, *Analecta Ent.*: 52. Type: *Patria incognita*.

Synonyms: *juno* Dalman, 1823; *elegans* Hoeven, 1840; *multicolor* Guenée, 1852; *bella* Bremer & Grey, 1853; #*renalis* Bryk, 1948

Range (as codes): TH Nrt Kao CMa Int Dst Dso8 MY VN LA KH IN NP CN KP KR JP ID PH Mno Bkd Ktd TW RU Us PK Abb

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**37. *Ulotrichopus macula* (Hampson, 1891)**

Original reference: *Audea macula* Hampson, 1891, *Illustr. typical Specimens lepid. Heterocera Colln Br. Mus.* 8: 84-85, Pl. cxlv fig.21. Type ♂: India, Nilgiri.

Synonyms: *macula* Hampson, 1891; *reducta* A.E.Prout, 1922 [ssp.]

Range (as codes): IN NI TH CMa Int VN NP LK CN Yu TW JP ID Ja Bor Sum Tim Flo Clb Crm PH Mno Bkd Ktd

The species is placed by Holloway (2005) in the genus *Catocala* Schr. However, Mitter & Silverfine (1988) has already clarified the taxonomical position of "macula" in the genus *Ulotrichopus* Wllgrn., 1860.

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

### Notodontidae

**38. *Allodonta (Hexafrenum) synthesina* Schintlmeister, 1993 (Fig.15)**

Original reference: *Hexafrenum synthesina* Schintlmeister, 1993, *Nachr. ent. Ver., Apollo, Suppl.* 12: 138-139, figs. Holotype ♂: Philippinen, Mindanao, Bukidnon, 40km NW Maramag, Dalongdong 800m, Talakag. Synonym: *synthesina* Schintlmeister, 1993 Range (as codes): PH Mno Bkd Crg

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**39. *Somera viridifusca* Walker, 1855 (Fig.16)**

Original reference: *Somera viridifusca* Walker, 1855, *List Spec. lepid. Insects Colln Brit. Mus.* 4: 822. Type: [Bangladesh]: Sylhet.

Synonym: *viridifusca* Walker, 1855

Range (as codes): IN BD Syl LK TW ID Clb PH Luz Pal Mno Bnn Crg Bor MY Sum Ja NP TH TW VN Ton Fan Tgi Cuc M-c Tda N-l CN Yu

The species is known also from the Philippines (Holloway, 1983). The subspecies of the Mindanao records is unknown. Schintlmeister (1993) described three new subspecies of this species from Luzon (Philippines), Sumatra and Celebes (Indonesia). About Mindanao specimens from Binansilang Mt., he stated: "...vermutlich eine eigene Unterart dar,..."

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**40. *Stauropus* sp.**

A single male looks like externally to *Stauropus hannemanni* Schintlmeister (1991). The species was described from northern Luzon. Its subspecies *similis* was also described by the same author from Mindanao Is. Schintlmeister (1991) stated: "...wurden beim Taxon *similis* fur einen Status als bona species sprechen". Therefore, we need more material, in order to understand better the status of *similis* from Mindanao.

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

***Pyralidae*****41. *Agathodes* sp.**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**42. *Botyodes asialis* Guenée, 1854**

Original Reference: *Botyodes asialis* Guenée, 1854, [in] Boisduval & Guenée, Hist. nat. Insectes (Spec. gén. Lépid.) 8: Syntypes: "Inde centrale, Bengale, Népaul".

Synonyms: *asisalis* Guenée, 1854; *#liliputalis* Strand, 1913

Range (as codes): LK MM TH NP Swk SG MY Bor TW PH Luz Boh CmM Mno Bkd Ktd IN Sum Ja Clb Amb ID AU QAu ZA

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**43. *Glyphodes* sp.1**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**44. *Glyphodes* sp.2**

Material studied: 1♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

**45. *Pachynoa thoosalis* (Walker, 1859)**

Original reference: *Botys thoosalis* Walker, 1859, List Spec. lepid. Insects Colln Br. Mus. 18: 737-738.

Synonyms: *thoosalis* Walker, 1859; *walkeri* Lederer, 1863

Range (as codes): TW PH Mno Crg SI IN Adm Clb Amb Crm ID MY MM PG

Material studied: 2♂. Philippines, Mindanao, Caragan Mt. 20-26.i.1998, local collector (Cesa).

***Sphingidae*****46. *Agrius convolvuli* (Linnaeus, 1758)**

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**47. *Daphnis hypothous* (Cramer, [1780])**

Original reference: *Sphinx hypothous* Cramer, [1780], Uitl. Kapellen 3: 165, pl.285 fig.D.

Synonym: *hypothous* Cramer, [1780]

Range (as codes): PH Bal Boh Ceb Hom Jol Ley Luz Mdo Mno Bkd Ktd Neg Pal Pan Pol Sam Sga IN Ass Khs Meg LK MM NP TH CMa Cuo Cmz Cz10 VN CN TW ID Sum Ja Tm JP

The species is widely distributed in the Indo-Australian tropics (Holloway, 1987).

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

**48. *Psilogramma menephron* (Cramer, [1780])**

Original reference: *Sphinx menephron* Cramer, [1780], Uitl. Kapellen 3: 164. Neotype ♀: Indonesia, Mollucas, Ambon (EMEM), designated by Eitschberger (2001: 11-12) (GP2952♀).

Synonyms: *menephron* Cramer, [1780]; *ahrendti* Pagenstecher, 1888

Range (as codes): PH Bal Boh Bon Ceb Dum Jol Ley Luz Mas Mdo Mno Bkd Ktd Neg Pal Pan Sam Siq Stu Taw AF Sfk Kab Nu Bsg IN LK TH CMa Cuo VN CN TW ID Sum Ja AU

The species is widely distributed in the Indo-Australian tropics (Holloway, 1987).

Material studied: 1♂. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

***Uraniidae*****49. *Lyssa zampa* (Butler, 1869)**

Original reference: *Nyctalemon zampa* Butler, 1869, Entomologist's mon. Mag. 5: 273. Syntypes: "Silhet".

Synonyms: *zampa* Butler, 1869; *crameri* Boisduval, 1874

Range (as codes): PH Mno Bkd Ktd CN BD Syl IN Ass MM VN Ton Hn MY TH CMa ID Ja Sum SG Nia Btg

The species is known also from the Philippines but without details on the localities (Holloway, 1998).

Mindanao records at subspecific level is unknown.

Material studied: 1♂1♀. Philippines, Mindanao, Bukidnon, Mt. Kitanglad, 20-22.vii.1998, local collector (Cesa).

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**Figs. 1, 2 – Aganidae:** *Agape chloropyga*. Upperside of male (left), *Asota heliconia*. Upperside of male (right). Both from Philippines, Mindanao, Caragan Mt., M. Kemal (Cesa)



**Figs. 3, 4 – Geometridae:** *Pingasa* sp.1. Upperside of male, GP2968♂ (left). *Pingasa* sp.2. Upperside of male, GP2969♂ (right). Both from Mindanao Caragan Mt., M.Kemal (Cesa)



**Figs. 5, 6 – Geometridae:** *Xandrames latiferaria*. Upperside of male, from Caragan Mt. (left). **Lymantriidae:** *Psilochira amydra*. Upperside of male, from Kitanglad Mt. (right). Both from Philippines, Mindanao. M.Kemal (Cesa)



**Figs. 7, 8** – *Noctuidae: Avitta quadrilinea*. Upperside of male (left), *Daddala microdesma*. Upperside of male (right). Both from Philippines, Mindanao, Kitanglad Mt.. M.Kemal (Cesa)



**Figs. 9, 10** – *Noctuidae: Ercheia cyllaria*. Upperside of male from Mindanao, Caragan Mt. (left); *Ophisma ? pallescens*. Upperside of male from Mindanao, Kitanglad Mt. (right). M. Kemal (Cesa)



**Figs. 11, 12** – *Noctuidae: Oxyodes scrobiculata*. Upperside of male from Mindanao Kitanglad Mt. (left); *Platyja minutipuncta*. Upperside of male from Mindanao, Caragan Mt (right). M. Kemal (Cesa)



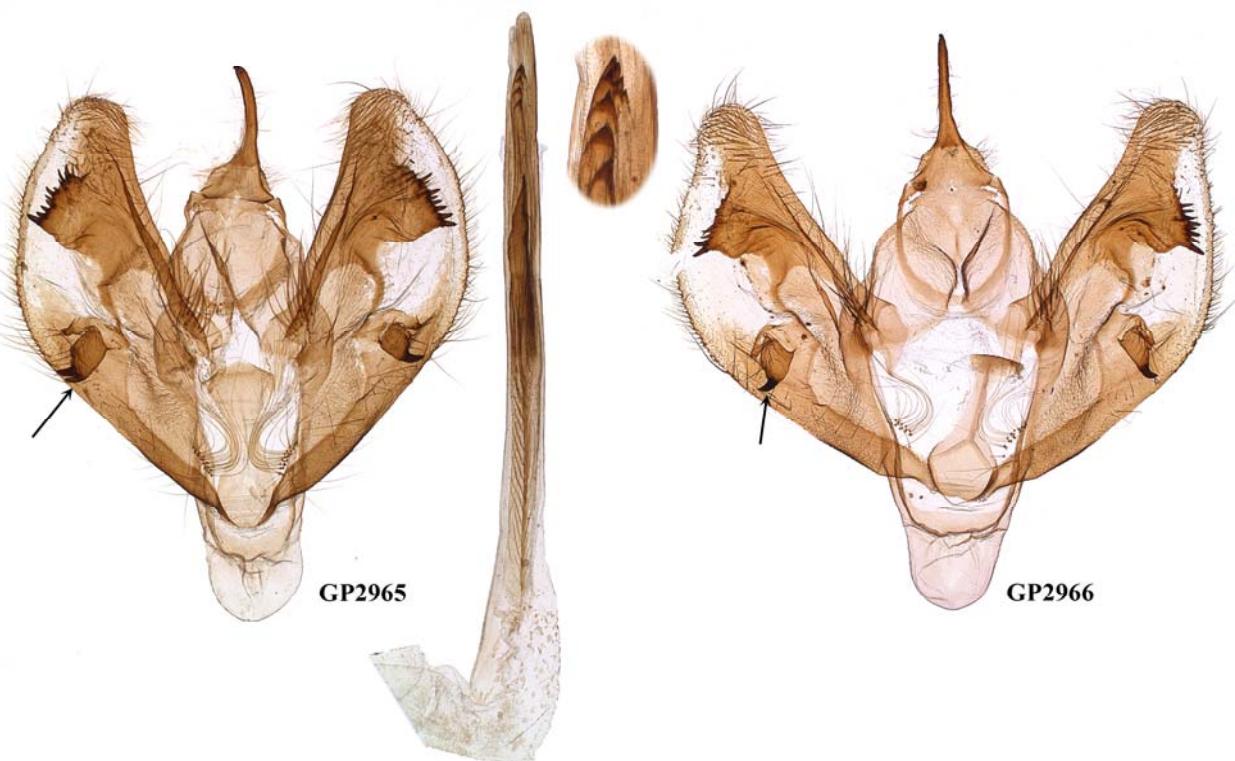
**Figs. 13, 14** – *Noctuidae*: *Ptyonota formosa*. Upperside of male from Mindanao Caragan Mt. (left), *Ramadasa pavo*. Upperside of male from Mindanao Kitanglad Mt. (right). M. Kemal (Cesa)



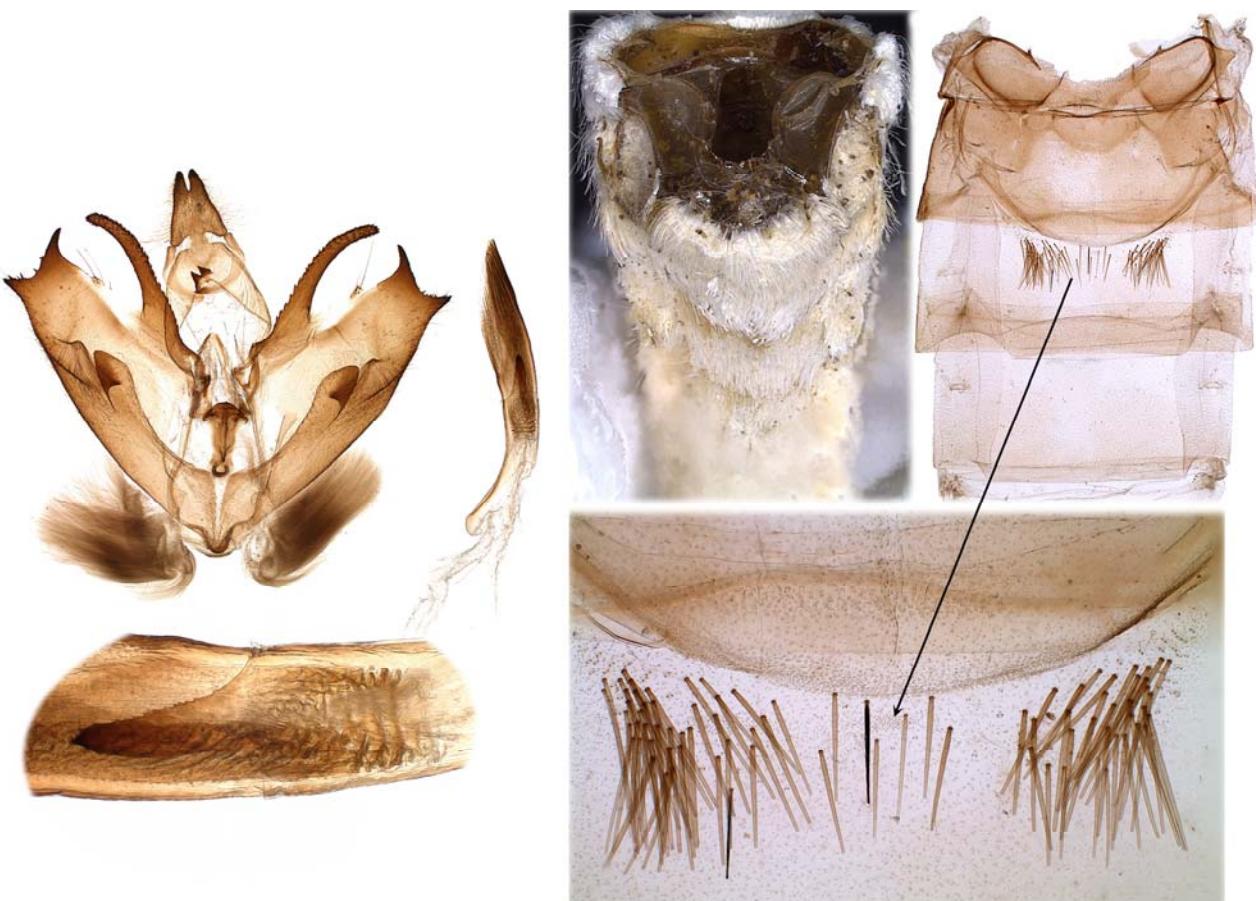
**Figs. 15, 16** – *Notodontidae*: *Hexafrenum synthesina*. Upperside of male (left), *Somera viridifusca*. Upperside of male (right). Both from Mindanao Caragan Mt. M. Kemal (Cesa)



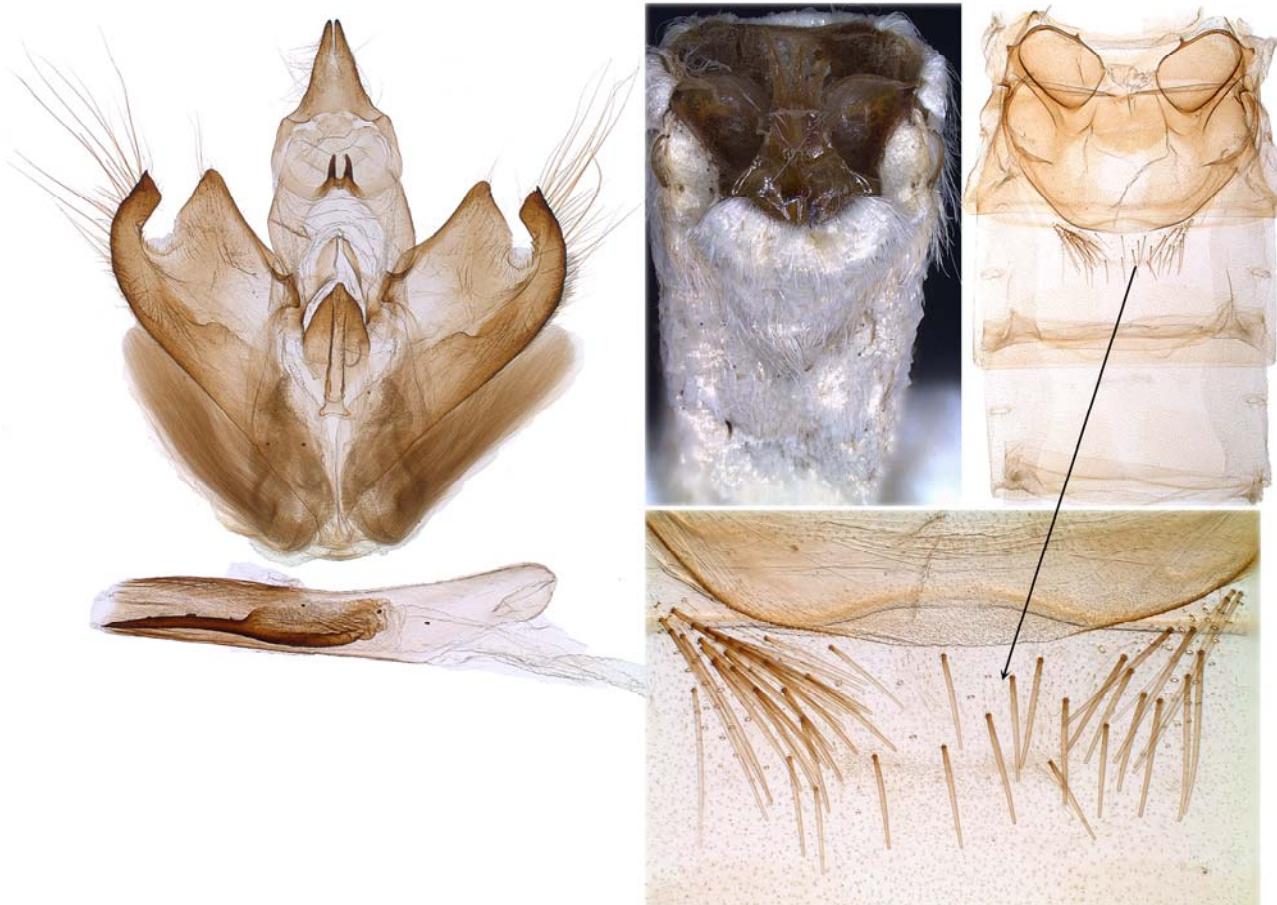
**Figs. 17-19** – *Geometridae*: *Cleora dacasini*. Upperside of male (left). Tympanal organ (before & after preparation) (GP2965♂) (right). Philippines, Mindanao, Caragan Mt. M. Kemal (Cesa)



**Figs. 20, 21 – Geometridae: *Cleora dacasini* male genitalia (GP2965, GP2966) from Mindanao, Caragan Mt., indicating some variabilities. M. Kemal (Cesa)**



**Figs. 22-25 – Geometridae: *Pingasa* sp. 1. Male genitalia, tympanal organs (before & after preparation). GP2968♂. Philippines, Mindanao, Caragan Mt. M. Kemal (Cesa)**



**Figs. 26-29** – Geometridae: *Pingasa* sp. 2. Male genitalia, tympanal organs (before & after preparation). GP2969♂. Philippines, Mindanao, Caragan Mt. M. Kemal (Cesa)

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